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ANTS COLLECTED ON CAPE COD, MASSACHUSETTS

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The list below represents the results of collections made each summer from 1925 to 1930 inclusive. Ants have been recorded from Cape Cod by Wheeler (1906, 1910, 1913); these records have not been reproduced in the present list except where they represent localities or forms not included in my own collections.

All available records are included, even for the commoner ants, with the result that a rough estimate of the frequency of a species on the Cape may be made by noting the number of localities from which it has been taken. The dates given represent the extremes between which winged queens or males have been collected. Dates in parentheses are from neighboring portions of eastern Massachusetts when these extend the limits found for Cape Cod.

The list as given cannot be supposed to represent the entire fauna of the region. Three forms in particular were expected and carefully searched for, without success—*Lasius aphidicola*, *L. interjectus*, and *Camponotus caryæ*. They are certainly either absent or much less common than in neighboring portions of the mainland. Other forms that may be expected are *Pheidole pilifera* (recorded by Wheeler from Naushon) and *Tetramorium cespitum* (which I have taken at Rochester, only a few miles from the Cape).

Cape Cod apparently represents the northern limit, or very nearly so, for the range of several ants: *Monomorium minimum*, *Aphaenogaster treatæ*, *Leptothorax davisi*, *Pren-*

olepis parvula, and *Formica difficilis*. *Lasius neoniger*, *Formica argentea*, *F. subænescens*, and *Camponotus noveboracensis* here approach their southern limits at low elevations in the eastern states.

This list may be compared profitably with Wheeler's lists for New England (1906), Nantucket (1928a), and Penikese (1926), and with Davis and Bequaert's list for Long Island and Staten Island (1922).

1. *Stigmatomma pallipes* Haldeman. East Falmouth Waquoit, Mashpee. (Naushon, August 31). This species is usually found in the beech-holly association that occurs sporadically in eastern Massachusetts.

2. *Ponera coarctata pennsylvanica* Buckley. East Falmouth, Brewster. Woods Hole (Wheeler 1906). Much less common than in the New York region.

3. *Monomorium minimum* Buckley. Woods Hole, Waquoit, Pocasset, South Yarmouth, North Eastham, South Wellfleet, Truro. July 15 (mating flight). Common in sand; also nests on the mounds of *Formica exsectoides*. I have found it only in the latter situation in northern New Jersey.

4. *Solenopsis molesta* Say. Woods Hole, West Falmouth, Sandwich.

5. *Crematogaster lineolata* Say. Woods Hole, Falmouth, East Falmouth, Pocasset, Sandwich, Hyannis, South Harwich, South Chatham, Brewster, South Orleans, Truro. July 24-August 29 (Rochester, July 22).

6. *Myrmecina graminicola americana brevispinosa* Emery. Woods Hole. Two specimens, under fallen leaves.

7. *Aphaenogaster treatæ* Forel. Woods Hole, Brewster. Darker colored than specimens from Mississippi.

8. *A. fulva aquia* Buckley. Woods Hole, East Falmouth, Waquoit, Pocasset. August 6-18.

9. *A. fulva aquia picea* Emery. Woods Hole, East Falmouth, Waquoit, Brewster, Provincetown. July 15-September 8.

10. *Myrmica punctiventris* Roger. Woods Hole, East Falmouth, Waquoit, Mashpee. September 7-13. (Fairhaven, August 13). Mating flight, September 13. Common in old nuts and galls and under fallen leaves.

11. *M. lævinodis bruesi* Wheeler. Woods Hole. July 29-August 28. This form was described from specimens taken in the woods adjoining the Fay Rose Gardens. It is now the dominant ant in these woods, but I have been unable to find a single specimen in any other place. The numerous nests seem to represent branches of a single family, since transfers of workers never lead to fighting—in spite of the fact that the species is very pugnacious and has the most painful sting of any ant I have encountered in the northeastern states.

12. *M. scabrinodis sabuleti* Meinert. Woods Hole, Falmouth, Falmouth Heights, East Falmouth, Pocasset, Truro. August 14-September 6.

13. *M. scabrinodis schencki emeryana* Forel. Woods Hole, Sandwich, South Harwich, Chatham.

14. *Harpagoxenus americanus* Emery. Woods Hole, West Falmouth, Sandwich. July 12-August 14. Sexual pupæ still present August 14. Found with *Leptothorax curvispinosus* and with *L. longispinosus*. I have taken this at three other unrecorded localities—Mendham, New Jersey; Cold Spring Harbor, Long Island, New York; Fairhaven, Massachusetts.

15. *Leptothorax longispinosus* Roger. Woods Hole, East Falmouth, Sandwich, Mashpee.

16. *L. curvispinosus* Mayr. Woods Hole, Falmouth, West Falmouth, Waquoit, Mashpee, Provincetown. August 1-7. Sexual pupæ present, July 4-August 7. Common in old acorns, nuts and hollow twigs.

17. *L. curvispinosus ambiguus* Emery. Woods Hole, Falmouth.

18. *L. texanus davisii* Wheeler. South Wellfleet. One nest, in white sand.

19. *Dolichoderus plagiatus* Mayr. Waquoit.
20. *D. plagiatus inornatus* Wheeler. Chatham.
21. *Tapinoma sessile* Say. Woods Hole, Falmouth, East Falmouth, Pocasset, Sandwich, Cotuit.
22. *Brachymyrmex heeri depilis* Emery. Woods Hole, South Orleans. August 22-23.
23. *Prenolepis imparis* Say. Woods Hole, Falmouth, East Falmouth, Waquoit. August 17. This form is apparently common, but is not easily found in mid-summer—as is also true in the New York region.
24. *P. parvula* Mayr. East Falmouth, Pocasset, South Wellfleet. August 29. This species is easily overlooked and may be commoner than is indicated.
25. *Lasius niger neoniger* Emery. Woods Hole, Falmouth, Falmouth Heights, Chatham, Truro. July 24-September 3. This form is not clearly distinct from *americanus* in this region. I have identified all the intermediates as *americanus*; I am inclined to suspect that the extreme hairy specimens listed here are not really distinct from the paler form of *americanus* referred to below.
26. *L. niger alienus americanus* Emery. Woods Hole, Falmouth, Falmouth Heights, West Falmouth, East Falmouth, Pocasset, Sandwich, Hyannis, South Yarmouth, South Chatham, Chatham, Brewster, North Eastham, South Wellfleet. July 11-September 30. There appear to be two distinct forms here—a darker form typically nesting in stumps and logs in the woods, not found infested with Mermithids; and a paler form typically nesting in the soil in sunny places (often on the beaches down to high-tide level), frequently producing short-winged mermithogynes (see Wheeler 1928). In the absence of adequate series from the Palæarctic region and from the western states, I am unable to make a thorough revision of the forms of *niger*—without which it seems to me undesirable to describe and name these types.

27. *L. brevicornis* Emery. Woods Hole, West Falmouth. August 19-September 30. I have once found mermithogynes in this species (see Wheeler 1928).

28. *L. flavus nearcticus* Wheeler. Woods Hole, Waquoit, Sandwich, Cotuit. August 13-September 8.

29. *L. latipes* Walsh. Woods Hole, Falmouth, Mashpee. Hyannisport (Wheeler). August 12-September 8. (Rochester, July 22.) Both the A and the B type of females occur on Cape Cod.

30. *L. claviger* Roger. Woods Hole, Falmouth Heights, Pocasset, Mashpee, South Chatham, Chatham. August 22-26.

31. *Formica sanguinea rubicunda* Emery. Cotuit. Woods Hole (Wheeler). (Rochester, July 22.) The only nest I have found on Cape Cod had *F. subaenescens* slaves.

32. *F. sanguinea subintegra* Emery. Woods Hole, West Falmouth, Waquoit, Mashpee. August 17-19. I have observed raids on August 6, and (on Naushon) August 25. Two colonies moving to new nest-sites were observed, August 12 and 15. All the slaves observed on Cape Cod have been *F. subsericea*.

33. *F. exsectoides* Forel. Woods Hole, Falmouth, East Falmouth, Waquoit, Mashpee, Chatham. August 22.

34. *F. difficilis* Emery. Hyannis.

35. *F. difficilis consocians* Wheeler. West Falmouth. Woods Hole (Wheeler). July 18. The one nest that I have found on Cape Cod contained numerous larvæ of *Microdon*.

36. *F. truncicola integra* Nylander. East Falmouth, Mashpee, South Harwich. August 6.

37. *F. truncicola obscuriventris* Mayr. Woods Hole, Pocasset. August 2. (Fairhaven, May 28.)

38. *F. fusca argentea* Wheeler. Woods Hole, Falmouth, Falmouth Heights, West Falmouth, Sandwich, Chatham,

Truro. Cotuit (Wheeler). July 24. This form is common on the beaches and sand-dunes. I have taken it at Guilford, Connecticut, but it has not been found on Long Island.

39. *F. fusca subænescens* Emery. Mashpee, Cotuit. (Fairhaven, August 13.)

40. *F. fusca subsericea* Say. Woods Hole, Falmouth, West Falmouth, East Falmouth, Waquoit, Pocasset, Mashpee. July 15-August 20. (Naushon, August 31.)

41. *F. neogagates* Emery. Woods Hole, Sandwich, Mashpee, Truro. (Rehoboth, August 18.) The specimens from Sandwich were in a nest that also contained the following form, and that was situated on the edge of a sand-dune. This species typically forms small colonies under stones in woods.

42. *F. neogagates lasioides vetula* Wheeler. Falmouth Heights, Pocasset, Sandwich, South Wellfleet. Woods Hole (Wheeler). This form nests on the edges of sand-dunes or salt-marshes.

43. *F. pallidefulva schaufussi* Mayr. Woods Hole, Falmouth.

44. *F. pallidefulva schaufussi incerta* Emery. Woods Hole, Falmouth, East Falmouth, West Falmouth, Waquoit, Pocasset, Sandwich, South Yarmouth, Chatham, South Wellfleet, Truro. July 15-18. (Rochester, July 22.)

45. *F. pallidefulva nitidiventris* Emery. Woods Hole, Falmouth, West Falmouth, East Falmouth.

46. *F. pallidefulva nitidiventris fuscata* Emery. Mashpee. Woods Hole (Wheeler).

47. *Polyergus lucidus* Mayr. Falmouth, West Falmouth. The slaves in both nests were *F. incerta*.

48. *Camponotus castaneus* Latreille. West Falmouth. August 7.

49. *C. castaneus americanus* Mayr. Woods Hole, Waquoit, Mashpee. August 14.

50. *C. herculeanus pennsylvanicus* Degeer. Woods Hole, Sandwich, Mashpee, North Eastham. August 16-27. (Naushon, August 30.)

51. *C. herculeanus pennsylvanicus mahican* Wheeler. Woods Hole (Wheeler). I have been unable to find this form.

52. *C. herculeanus pennsylvanicus ferrugineus* Fabricius. Woods Hole. One queen and two workers, taken separately.

53. *C. herculeanus ligniperda noveboracensis* Fitch. Woods Hole, Waquoit, Mashpee, Hyannis, Chatham. July 4. Common in logs about sandy ponds, where it replaces pennsylvanicus. At Woods Hole it is much less common than pennsylvanicus; on Naushon pennsylvanicus is still more frequent, but I have not found *noveboracensis*.

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